

DISCUSSION OF THE AMENDMENT

The term “contain . . .” has been replaced with the equivalent --compris . . . --, where applicable. Claim 13 has been amended by deleting reference to low-consistency stock. Claim 14 has been amended to clarify that the polymer recited therein is that of Claim 9. Claim 16 has been canceled. Claim 17 has been amended to depend on Claim 14.

No new matter or new issue is believed to have been added by the above amendment. With entry thereof, Claims 1-15, 17 and 18 will now be pending in the application.

REMARKS

Due to the length of the specification herein, Applicants will cite to the paragraph number of the published patent application (PG Pub) of the present application, i.e., US 2007/0181274, when discussing the application description, rather than to page and line of the specification as filed.

The rejection of Claims 1, 4-10 and 13-18 under 35 U.S.C. § 103(a) as unpatentable over US 5,501,774 (Burke) in view of US 6,797,785 (Hund et al), is respectfully traversed.

As previously explained, and as described in the specification at paragraphs [0002]-[0004], homo- and/or copolymers of N-vinylformamide having varying degrees of hydrolysis have been used in the prior art as additives in the production of paper. The specification describes at paragraph [0005] that although the polymers containing vinylamine units and disclosed in the above-discussed prior art are good fixing agents or drainage aids, flocculants and retention aids, problems with deposition in the wire part, press section and drying section of a paper machine still occur in practice when processing paper stocks containing interfering substances, such as coated broke. The paper machine then has to be shut down and cleaned.

The present invention successfully addresses these problems by using a polymer of the type discussed above, wherein the degree of hydrolysis is from 1 to 20 mol%, which polymer is added to a high-consistency paper stock, the high-consistency stock is diluted with water to a low-consistency stock, and the low-consistency stock is drained.

In response to Applicants' argument regarding comparative data in the specification demonstrating the significance of the present invention, the Examiner finds that the data is not commensurate in scope with the claimed invention. Particularly, the Examiner notes that only one example according to the present invention was tested, in which a single polymer [PVAm 3] having a molecular weight of 2,000,000 and comprising 10 mol% of vinylamine units and 90 mol% N-vinylformamide units was added in an approximate amount of 0.009

wt% based on the coating broke train, a paper stock of 4% concentration was formed comprising coated broke and polymer, the stock diluted to 0.8% concentration, and paper formed.

To that end, the newly-submitted Esser Declaration contains three additional examples according to the invention and six comparative examples. Example 2 uses vinylamine-containing polymer PVAm 3, as discussed above. Example 3 uses new PVAm 4, which has the same molecular mass but 1 mol% vinylamine units and 99 mol% N-vinylformamide units. Example 4 uses new PVAm 5, which comprises 20 mol% of vinylamine units and 80 mol% of N-vinylformamide units. Examples 2, 3 and 4 were each tested using the same paper stock. Comparative Examples 4, 5 and 6 are analogous to Examples 2, 3 and 4, respectively, but add the polymer to the low-consistency stock, rather than to the high-consistency stock. Comparative Examples 7, 8 and 9 use the same paper stock as the above Examples and Comparative Examples, but employ comparative PVAm 1 and PVAm 2, which are described in the specification, and new PVAm 6 which is identical to inventive PVAm 3 with regard to relative amounts of vinylamine units and N-vinylformamide units, but has a molecular weight of 400,000 D. The Examples and Comparative Examples were evaluated as described in the Esser Declaration. The data is shown in the Table at paragraph 9 thereof. The data show superior results across the range recited in the claims of the degree of hydrolysis limitation of from 1 to 20 mol%, the significance of metering the polymer into the high-consistency stock, rather than to the low-consistency stock, and the significance of the minimum average molar mass limitation.

Applicants continue to submit that neither Burke nor Hund et al, alone or in combination, disclose or suggest the use of the particular polymers of the present invention, having the recited degree of hydrolysis range and minimum average molar mass, and the

importance of metering such a polymer to high-consistency paper stock before it is diluted with water to become a low-consistency paper stock.

Indeed, *no prima facie* case of obviousness has been made out, since the disclosure of homo- and/or copolymers of N-vinylformamide covers a wide range of utilities associated with paper-making, yet such a material is not disclosed for such utility in either Burke or Hund et al. Thus, as previously stated, Burke discloses nothing more than what Applicants have already acknowledged is known. Burke discloses preparing a high-consistency paper stock and then diluting with water to form a low-consistency stock, and adds a cationic coagulating agent to the thick stock, but does not distinguish from among the various such coagulating agents which may be used, and disclose, for example, polyaluminum chloride as an applicable coagulating agent (column 3, line 62) which has been shown in the specification herein in Comparative Example 1 to be inferior. Nor does Burke disclose the presently-recited polymer. Nor does Hund et al disclose the presently-recited paper-making utility.

For all the above reasons, it is respectfully requested that this rejection be withdrawn.

The rejection of Claims 1-19 under 35 U.S.C. § 103(a) as unpatentable over US 6,083,348 (Auhorn et al) in view of US 4,444,667 (Burkert et al) as evidenced by US 4,753,710 (Langley et al), is respectfully traversed.

While Auhorn et al may be drawn to the presently-claimed paper-making utility, the Examiner concedes that Auhorn et al discloses no degree of hydrolysis. Burkert et al, on the other hand, is drawn to a flocculant for sludge, not paper-making. In addition, the degree of hydrolysis discloses is 10 to 90 %, which is so broad as to be practically meaningless, i.e., degree of hydrolysis is not important. Without the present disclosure as a guide, one skilled in the art would not have combined Auhorn et al and Burkert et al, with or without Langley et

al, but if combined, could not have predicted the superior results of record obtained by the present invention.

For all the above reasons, it is respectfully requested that this rejection be withdrawn.

The provisional rejections of Claims 1-3, 5-8 and 9 on the ground of nonstatutory obviousness-type double patenting over:

Claims 1, 5, 6, 8-10 and 12 of copending Application No. 11/719,826 ('826 application) in view of Auhorn et al,

Claims 1, 2 and 6 of copending Application No. 11/574,677 ('677 application) in view of Auhorn et al, and

Claims 1-5 of copending Application No. 12/065,688 ('688 application) in view of Auhorn et al,

are respectfully traversed.

Despite the difference shown in the previous response between the present claims and the claims of the copending applications and Auhorn et al, the Examiner finds that "[t]he copending applications claim a degree of hydrolysis overlaying the claimed ranges. One of ordinary skill in the art would have found it obvious to use the method of addition of [Auhorn et al] for the vinylamine polymer and other retention aid to obtain the currently claimed subject matter and have a reasonable expectation of success."

In reply, the at least 10 mol% of vinylamine units in Claim 9 of the '826 application, or the degree of hydrolysis of vinylformamide units of from 0.5 to 100% in Claim 2 of the '677 application, or the same degree of hydrolysis of from 0.5 to 100 mol% in Claim 3 of the '688 application, suggests nothing at all about the significance of the presently-recited range of 1 to 20 mol%, nor has the Examiner responded to other arguments made by Applicants, such as no distinction between high-consistency stocks and low-consistency stocks, as well as other differences.

Accordingly, it is respectfully requested that the provisional rejections be withdrawn.

The rejection of Claims 13-17 under 35 U.S.C. § 112, second paragraph, as indefinite, is respectfully traversed. The rejection would now appear to be moot in view of the above-discussed amendment. Accordingly, it is respectfully requested that the rejection be withdrawn.

All of the presently-pending claims in this application are now believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

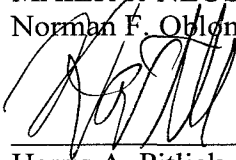
Customer Number

**22850**

Tel: (703) 413-3000  
Fax: (703) 413 -2220  
(OSMMN 08/07)

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,  
MAIER & NEUSTADT, L.L.P.  
Norman F. Oblon



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Harris A. Pitlick  
Registration No. 38,779